Remarks

I. Status of the Claims

Claims 1-27 are pending. Claims 1-23 were originally filed in the Application, and of those claims, Claims 1-13 and 18-19 are amended herein. New Claims 24-27 are added.

II. Concerning the Amendments

In the drawings, revisions to Applicants' Fig. 4 have been made to show generally operations associated with LNG product storage facilities 361 and LNG product shipping facilities 365, and connection lines 363 and 367. Such operations are generally known to the art and the Specification herein clearly mentions LNG product storage and shipping operations and facilities in a number of locations, such as page 2, line 9; page 5, lines 11-12; page 6, line 12; page 7, lines 10-11; page 8, lines 13-14; page 9, lines 15-17; and page 19, lines 4-8. The revised drawing shows no new matter and merely illustrates these operations positioned in their proper position with respect to the other steps of the process. The drawing revisions are considered to address the Examiner's objections to Applicants' Fig. 4 as originally filed.

In the Specification, a new paragraph has been added just prior to original numbered paragraph [0034] that begins at page 17, line 24 of the Specification to describe the LNG product storage and shipping operations relative to other operations in the process.

In the claims, Claims 1-13 and 18-19 have been amended. These amendments correct typographical errors and are otherwise merely clarifying in nature. Applicants submit that the originally filed claims are patentable over the cited art for at least the reasons discussed hereinbelow.

New Claims 24-27 are added. It is noted that in the Office Action Applicants' dependent Claims 3, 4, 5, 8-10, 14-16 and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. New Claims 24-27 are presented to rewrite the subject matter within these objected dependent claims and thereby obviate this ground for objection.

Applicants respectfully request entry of the above-described amendments.

III. The Claimed Invention

In one aspect, the present invention is directed to a light hydrocarbon gas liquefaction process for the liquefaction of selected quantities of light hydrocarbon gas. The process includes a light hydrocarbon gas liquefaction launch train to liquefy an initial amount of light hydrocarbon gas and one or more optional

subsequent expansion phases to said light hydrocarbon gas liquefaction launch train to liquefy additional selected quantities of light hydrocarbon gas up to a selected maximum quantity of light hydrocarbon gas for the process. The process comprises the following steps:

a) constructing the light hydrocarbon gas liquefaction launch train for the liquefaction of the initial amount of light hydrocarbon gas, the launch train including facilities for light hydrocarbon gas pretreatment to remove at least one of acid gases, mercury, and water; facilities for refrigerant compression; facilities for cryogenic heat exchange; access services; facilities for light hydrocarbon gas liquefaction; and facilities for liquefied light hydrocarbon gas product storage and shipping;

b) positioning at least a portion of the facilities in the launch train for shared use by the launch train and one or more subsequent optional modular expansion phases for liquefaction of up to the selected maximum quantity of light hydrocarbon gas;

c) constructing at least a portion of the launch train facilities for shared use by modular expansion, as required by the addition of one or more subsequent optional expansion phases to the launch train, up to a maximum capacity as required to liquefy the selected maximum quantity of light hydrocarbon gas, the shared use facilities of the launch train being designed at a size sufficient to liquefy the selected maximum quantity of light hydrocarbon gas in the launch train as constructed and expanded in the one or more optional expansion phases to the required capacity; and

d) processing light hydrocarbon gas in the launch train to produce liquefied light hydrocarbon gas.

IV. Concerning the Rejections

Claims 1, 2, 6-7, 11-13, 17-19 and 23 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent 6,647,744 issued to Fanning et al. (Fanning '744) or U.S. Patent Publication 2003/0154739 by Fanning et al. (Fanning '739) in view of the article by Kosseim et al. None of these cited references discloses or suggests an LNG process or system wherein an initial launch train is provided, which launch

train includes shared use facilities initially designed for future expansion to produce a selected maximum quantity of liquefied light hydrocarbon gas, and wherein the launch train may be later expanded in one or more increments by modular expansion to produce the selected quantity of liquefied light hydrocarbon gas. Applicants therefore respectfully traverse the rejection and reconsideration of the claims presented herein is respectfully requested.

At page 3 of the Office Action, the Examiner concludes that both of the Fanning et al. references disclose what is described as Applicants' "basic inventive concept, i.e., a natural gas liquefaction system with a shared compression module which is used by multiple chains substantially as claimed", citing to column 3, line 24 of Fanning '744. It is respectfully submitted that this is not a correct statement of Applicants' claimed invention.

Applicants' claimed invention relates to a liquefaction process and system which comprises an initial launch train designed initially with some or all of the facilities therein designated as shared facilities, which shared facilities are initially designed and constructed of a size sufficient to ultimately handle a pre-selected maximum desired quantity of light hydrocarbon gas, i.e., natural gas. As demand for the gas increases, the launch train can be expanded in modular fashion, i.e., by adding additional process equipment to the shared use facilities, so as to result in an expanded process and thereby provide additional quantities of liquefied gas up to the pre-selected maximum quantity. Applicants herein have discovered that it is more efficient and economical to initially build some of the facilities in the initial launch train of the ultimate size necessary to produce the pre-selected amount of liquefied gas. While this necessarily means that at least a portion of the process according the present invention is oversized relative to the amount of treated or liquefied gas that is initially produced by the launch train (and therefore essentially a "pre-paid" investment toward future capacity increases for the overall plant facility), the launch train has been designed "up front" to be later expanded by adding additional shared facilities equipment as needed to meet market demands for the product produced by the process. As a result, it is not necessary to build separate "stand-alone trains" to meet increasing market demand, as generally described by Fanning '744 at column 1, lines 43-56, which results in duplicative or redundant systems and equipment between separate "stand-alone trains" and therefore unnecessary expense. Applicants' claimed invention is directed to the use of these larger facilities in the initial train to avoid the construction of duplicative facilities in subsequent expansions of the initial launch train. This use of larger equipment may be somewhat more expensive initially, but is considered to be less expensive ultimately when expanded capacity is desired.

Fanning '744 discloses a process and system wherein two or more so-called "dependent trains" are essentially integrated with a common compression string(s) that supply compressed refrigerant as a

utility to the liquefaction systems of each dependent train. See, Abstract and Fig. 2 of Fanning '744. There is no disclosure or suggestion by Fanning '744 that any of the common compression strings or other process equipment is initially designed and constructed so as to take into account future capacity increases. As pointed out by the Examiner in the Office Action, Fanning '744 states at column 3, lines 30-38 that:

> "If more than one of the common compression strings are required due to the increasing size of an LNG plant (i.e., number of dependent trains to be serviced), a plurality of first compression strings are provided and manifolded together so that the compressed first refrigerant from the first compression strings can be delivered to various dependent trains as needed. Likewise a plurality of second compression strings can be manifolded together whereby the second refrigerant from the second compression strings can be directed to various dependent trains as needed."

It is clear that the above-quoted passage from Fanning '744 does not contemplate a process or system whereby the initial compression string equipment design takes into account future expansions. While additional compression strings can be provided, as indicated by Fanning '744, and "manifolded" together with the initial compression strings, it is clear to one skilled in the art that adding such compression strings will require an extensive retrofit and more than just a simple connection of the additional compression strings to the original compression string equipment, as the initial manifolds, piping, and valves are clearly sized for the initial flow of refrigerant within the original compression string equipment. There is no teaching or suggestion by Fanning '744 that any of this original compression string equipment can or should be sized initially, i.e., oversized, so as to accommodate future expansion. In fact, Fanning '744 teaches that separate stand-alone trains are used in combination with these so-called "dependent trains". See, column 5, lines 29-33.

Fanning '739 discloses a process and system wherein two or more so-called "dependent trains" are integrated with a common flash tank, reject gas heat exchanger, and fuel gas compressor. See, Paragraphs 0011 and 0012 and Fig. 2 of Fanning '739. Fanning, et al '739 also discloses various uses for boil-off gas related to storage, but does not in any way suggest that the storage facility should be designed and constructed of a size initially to handle the quantities of LNG produced ultimately at the maximum process capacity. There is similarly no disclosure or suggestion by Fanning '739 that any of the common equipment is initially designed so as to take into account any future expansion or capacity increases.

Neither Fanning, et al reference is considered to show or suggest such a process as claimed herein. In addition to a failure by the cited art to take into account future expansion as mentioned above, it

is clear that Fanning '744 and Fanning '739 each disclose a process and system wherein at least two so-called "dependent trains" are required to be constructed initially so as to provide the "dependent trains" required their claimed process and system. LNG plants constructed prior to the present invention have been generally based on "trains" as generally described by Fanning '744 at column 1, lines 43-56 which produce LNG that is marketed under long-term supply contracts. Such contracts are primarily negotiated and agreed to before investment is made in building the train that produces the LNG product. As demand for LNG increases in the future, prior to the present invention, such plants were expanded by building a separate "stand-alone train" to meet the incremental increases in demand with the redundant equipment and duplicative expenses as mentioned by Fanning '744. As will be apparent to one skilled in the art, the process and system disclosed by Fanning '744 and Fanning '739 requires building at least two so-called dependent trains up-front, which does not make economic sense with respect to how LNG is marketed as described above. Commercially, an LNG producer would not wait until market demand reaches a point and long term supply contracts are in place so as to justify construction of two such trains. Fanning '744 and Fanning '739 do not solve the problem of expanding LNG production in a more economical manner (rather than building a plurality of trains, stand-alone or otherwise) to meet a growing demand for LNG. Applicants claimed process can provide a solution to this problem.

In summary, neither of the Fanning et al references discloses the construction of oversized shared use facilities for an initial launch train so that subsequent equipment can be added to increase capacity to produce additional quantities of LNG without the need to construct duplicate facilities. As one example, as discussed in Applicants' specification, if a regeneration facility is produced for an amine scrubbing system which has the capacity to scrub the spent amine solution from a sufficient number of amine units to remove acid gas from all of the anticipated streams of natural gas charged to the process, then in each subsequent process only an amine scrubber will need to be added. In other words, no additional spent amine regenerators would need to be added. Similar considerations apply specifically to the dewatering, which has also been discussed as an example in Applicants' specification. This method of construction is applicable to any or all of the facilities included in an initial train design. It is respectfully submitted that nothing suggesting this invention has been shown or suggested by either Fanning, et al disclosure.

Kosseim et al simply discloses basic processes for the treatment of natural gas. These processes are generally known and the disclosure therein does nothing to show or suggest how these processes should be sized and included in a liquefaction process other than as used for their basic design purpose. Kosseim et al adds nothing to the disclosures made in either of the Fanning, et al. references.

Accordingly, it is respectfully resubmitted that none of the references, either singularly or taken together, have shown or suggested Applicants' claimed invention.

It is therefore respectfully submitted that none of Applicants' Claims 1, 2, 6-7, 11-13, 17-19 and 23 have been shown or suggested by either Fanning et al reference, taken alone or in combination with Kosseim, et al. It is therefore respectfully requested that all rejections of Applicants' claims under these references be withdrawn.

Claims 1, 2, 6-7, 12-13, 18 and 19 also stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 15-17 of co-pending Serial No. 10/674,246, published as US Patent Publication 2004/0109803. Submitted concurrently herewith is a Terminal Disclaimer, which is believed to fully obviate the grounds for this rejection. Accordingly, Applicants respectfully request withdrawal of this provisional ground for rejection.

V. Concluding Remarks

The application names joint inventors and the inventorship is considered to be proper. Each inventor had an obligation to assign invention rights to a common entity at the time the invention as claimed herein was made.

Applicants have reviewed the art made of record, but not relied upon to reject the pending claims. Applicants do not believe this art is relevant to the claimed invention herein.

Accordingly, it is believed that in view of the foregoing amendments and comments, all of Applicants' claims are now in condition for allowance and such is respectfully solicited.

Respectfully submitted,

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Amendments to the Drawings:

Attached hereto is a "Replacement Sheet" for Fig. 4 and also a copy of a drawing sheet labeled "Annotated Mark-Up Drawings" showing the original sheet with Fig. 4 marked up with the changes being requested herein. The Replacement Sheet is intended to replace the original sheet that includes FIG 4.

In the Replacement Sheet for Fig. 4, previously omitted elements 361, 363, 365, and 367 have been added.

Annotated Marked-up Drawings

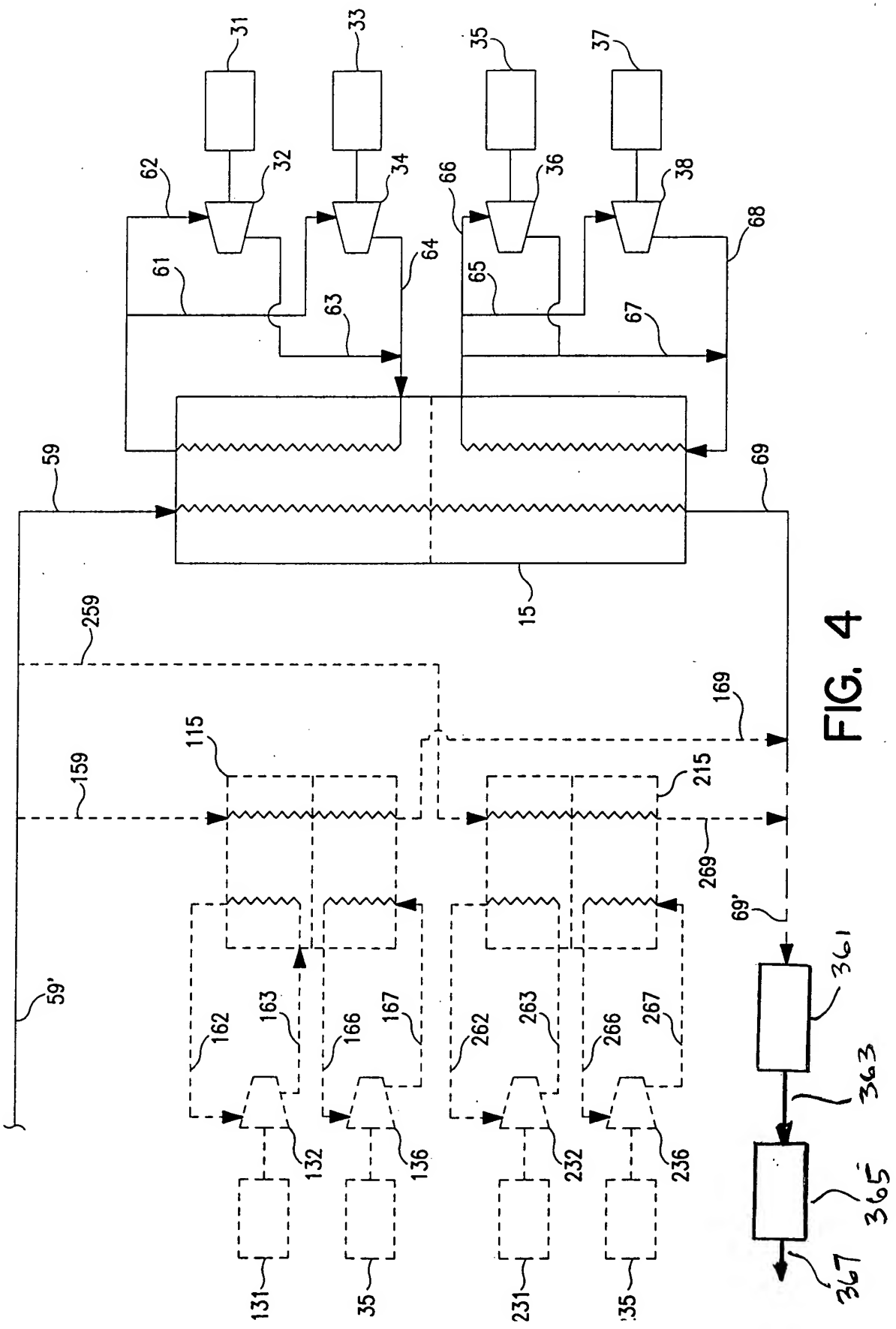

FIG. 4